Great Basin Unified
Air Pollution Control District

DRAFT

2013
Annual Air Quality Monitoring Network Plan

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Tables and Figures

1.0 Introduction

An annual review of all national air quality monitoring networks is required by Federal regulations as a means to identify needs for addition, relocation, or termination of monitoring stations or instrumentation. The Annual Monitoring Network Plan (AMNP) prepared by the California Air Resources Board (CARB), the primary quality assurance organization of which the Great Basin Unified Air Pollution Control District (District) is a part, includes the area encompassed by the District. With this document, the District has sought to develop a more comprehensive and District-specific plan for submittal it the U.S. Environmental Protection Agency (EPA). This plan describes the network of ambient air quality monitors to be operated by the District during the 2013 calendar year. It includes a review of actions taken in the monitoring network during the 2012-2013 fiscal year and plans for actions in the years ahead. This draft plan addresses the requirements for an annual network plan as listed in the Code of Federal Regulations, Title 40, Part 58, Section 10 (40 CFR 58.10). These regulations require that the AMNP be submitted to the EPA by July 1 of each year after a 30-day public comment period. The comment period for this plan began on June 14, 2013, and closed on July 15, 2013, after which the plan, along with the comments received during the comment period, will be submitted to EPA for approval.

The District staff, along with the CARB and EPA Region IX conducted a comprehensive review of the air monitoring stations throughout the District in 2007. State and Local Air Monitoring Station (SLAMS) designations, monitoring objectives, and spatial scales of representativeness were assigned to the criteria pollutants monitored by site. Each year, District staff conducts an annual review of the air monitoring network to evaluate whether the current monitoring strategies are meeting the needs of the District, to determine compliance with all current Federal and State regulations, and to aid in the development of future monitoring strategies. When monitoring station additions or relocations are warranted, site reports are written and/or updated locally and in the EPA's Air Quality System (AQS) database to document compliance with established monitoring criteria.

2.0 Public Comments

Pursuant to Federal regulations, this draft plan was made available for public inspection and comment for at least 30 days prior to submission to the EPA. Notice of availability of the document was published in local newspapers and the document was posted to the District's website (www.gbuapcd.org) on June 14, 2013, under the link, "What's New." The public review period provides an opportunity for the public, the EPA, and any other interested parties to provide comments on the plan. Comments received during the comment period will be included with the plan in the submission. Following the review period ending July 15, 2013, the plan will be submitted to EPA for approval of any SLAMS network changes.

3.0 Network Design

The District operates eighteen (18) air quality monitoring stations in four planning areas and in the general environs of the District's three counties: Alpine, Inyo, and Mono. The planning areas in the District are: Coso Junction (formerly Searles Valley), Southern Owens Valley, Mono

Basin, and Mammoth Lakes. Figures 1 - 3 present maps of the entire District indicating the planning areas, three of which are PM_{10} nonattainment areas, the monitoring stations currently in operation, and those stations planned for installation this year. Note that three monitoring stations, North Beach, Mill Site, and Dirty Socks, were shut down due to the cancelation of leases in November 2012, by the Los Angeles Department of Water & Power, the land owner and the air polluter responsible for the dust emissions from Owens Lake. These sites are noted in Figure 2 by the site name in outline text. District staff is working to relocate these stations onto public lands administered by the California State Lands Commission and the U.S. Bureau of Land Management by the end of 2013. The new locations are within approximately 500 meters of the former locations.

Table 1 provides a list of the monitoring stations, the pollutants measured at each station, the EPA Air Quality System (AQS, the EPA's national air quality data base) site codes, and the start date for each station.

Table 2 presents the monitoring objective and spatial scale for each monitor at each site. A list of the monitoring objectives and a description of them is provided in this document. Portions of these monitoring objectives and their descriptions are adapted from the CARB annual network plan for 2011.

After consultation with the District Board and District monitoring specialists, the APCO determines monitoring locations in the District, as delegated by the CARB. Monitoring locations are then added to or removed from the network monitoring plan that is assembled and presented annually to the public for comment. This plan is then submitted to EPA for review. The EPA Region IX administrator has the final authority on the configuration of the monitoring network.

Multiple purposes for monitoring a pollutant at a particular site are possible. There is some overlap between monitoring objectives as defined by EPA, presented in Table 2, and the monitoring purposes presented in Table 3. A brief description of the network for each criteria pollutant monitored is provided here. Further site-specific information is presented in Appendix A.

Figure 1. Great Basin Unified Air Pollution Control District Map

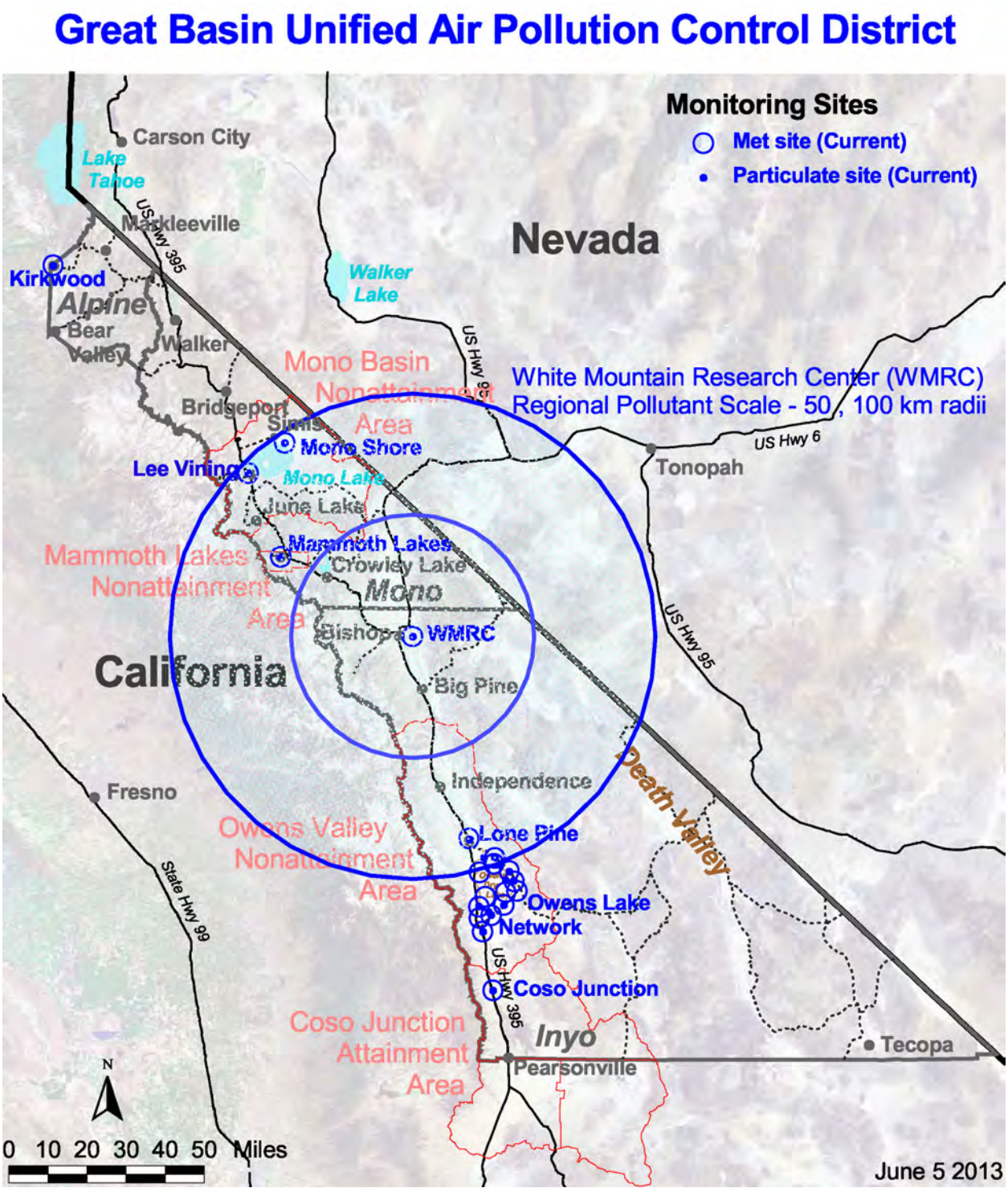


Figure 2. Great Basin Unified Air Pollution Control District Map, Owens Lake detail

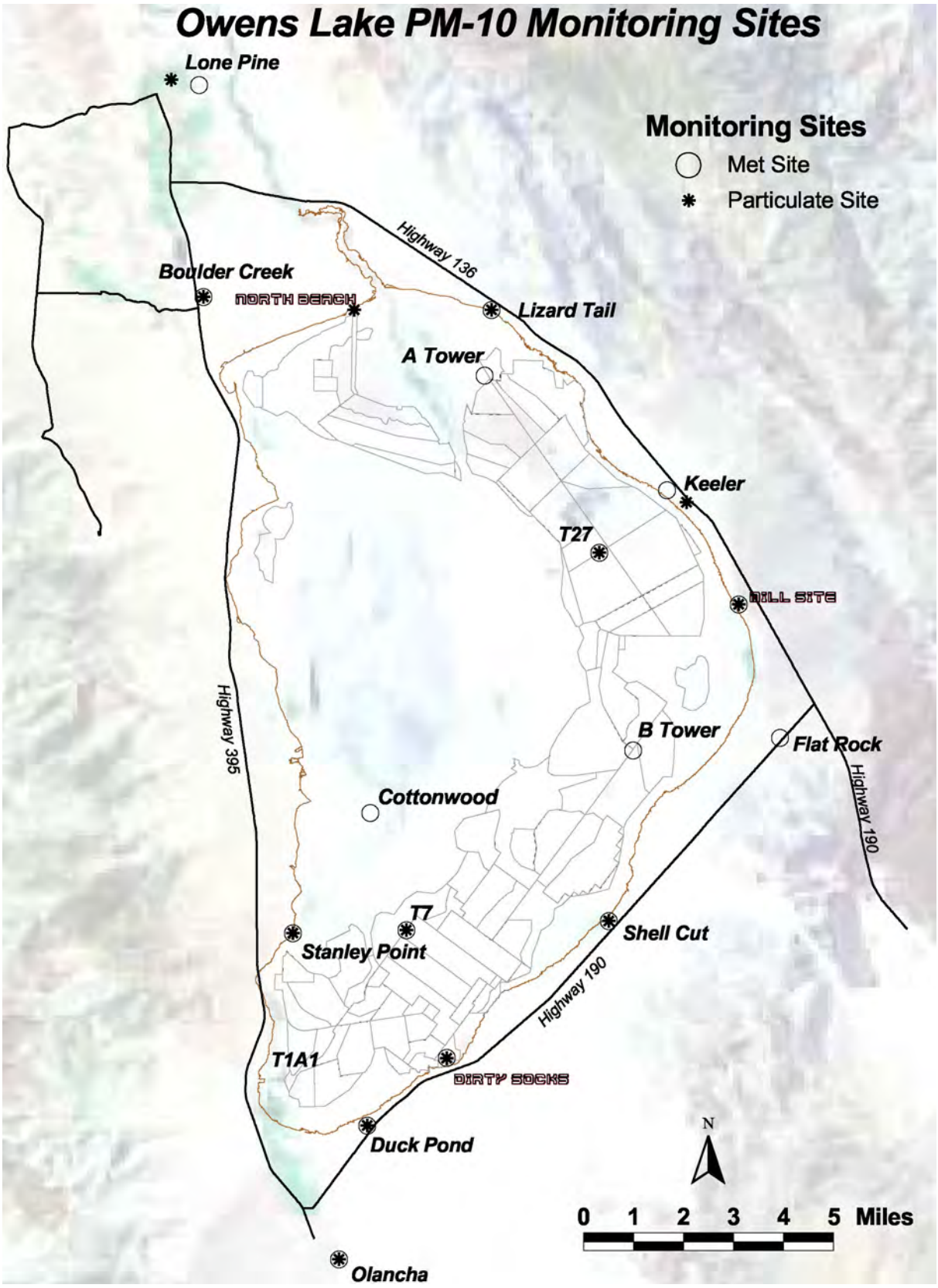


Figure 3. Great Basin Unified Air Pollution Control District Map, Mono Lake detail

Table 1. List of Monitoring Sites and Variables Monitored

Site Name	Network	AQS Number	Pollutants Monitored	Start Date
Dirty Socks *	Owens Lake	06-027-0022	PM10	Jun-99
Shell Cut	Owens Lake	06-027-0025	PM10	Jan-01
Flat Rock **	Owens Lake	06-027-0024	PM10	Jan-01
Bill Stanley	Owens Lake	06-027-0026	PM10	Mar-02
Olancha	Owens Lake	06-027-0021	PM10	Aug-95
Lone Pine	Owens Lake	06-027-0004	PM10	Jan-80
North Beach *	Owens Lake	06-027-0029	PM10	Nov-08
Lizard Tail	Owens Lake	06-027-0028	PM10	Feb-08
Keeler	Owens Lake	06-027-1003	PM10, PM2.5	Jul-94
Mill Site *	Owens Lake	06-027-0030	PM10	May-11
T-7	Owens Lake	SPM	PM10	Jul-12
T-4 ***	Owens Lake	SPM	PM10	Mar-10
T-27	Owens Lake	SPM	PM10	Aug-12
T-23 ***	Owens Lake	SPM	PM10	Mar-10
Coso Junction	Owens Lake	06-027-1001	PM10	Mar-79
Mammoth Lakes	Mammoth Lakes	06-051-0001	PM10	Apr-84
Lee Vining	Mono Basin	06-051-0005	PM10	Jan-81
Simis Residence †	Mono Basin	06-051-0007	PM10	May-82
Mono Shore	Mono Basin	06-051-0011	PM10	Jan-00
White Mountain ††	District	06-027-0002	PM10	Apr-06
NCORE	District	06-027-0002	CO, SO2, O3, NOy, PM10, PM2.5, PM10-2.5	Jan-13

* Monitor down temporarily due to lease cancellation by property owner.
** PM10 monitoring ended at Flat Rock May 2011 when monitor was moved to Mill Site. Flat Rock now used for meteorological monitoring and video capture only.
*** Special purpose monitoring stations. PM10 monitoring ended July 9, 2012, for T4 and August 22, 2012, for T23.
† PM10 monitoring ended August 2008; meteorological monitoring ended June 2011.
†† District's Portable Monitoring Station berth, adjacent to District's NCORE station.

Table 2. Criteria Pollutant Monitoring Objectives and Spatial Scales

MONITORING OBJECTIVE	SPATIAL SCALE
HC - Highest Concentration	MI - Microscale
PO - Population Oriented	MS - Middle Scale
SI – Source Impact	NS - Neighborhood Scale
BK - Background Level	US - Urban Scale
PT - Pollutant Transport	RS – Regional Scale
VI – Visibility Impacts	NaS – National Scale
SPM - Special Purpose Monitor	GS – Global Scale

Site Name	Network	PM10	PM2.5
Dirty Socks *	Owens Lake	SI/NS	
Shell Cut	Owens Lake	SI/NS	
Flat Rock **	Owens Lake	SI/NS	
Bill Stanley	Owens Lake	SI/NS	
Olancha	Owens Lake	SI/NS	
Lone Pine	Owens Lake	PO/NS	
North Beach *	Owens Lake	SI/NS	
Lizard Tail	Owens Lake	SI/NS	
Keeler	Owens Lake	PO/NS	PO/NS
Mill Site *	Owens Lake	SI/NS	
T-4 ***	Owens Lake	SI/NS	
T-7 †	Owens Lake	SI/NS	
T-23 ***	Owens Lake	SI/NS	
T-27 †	Owens Lake	SI/NS	
Coso Junction	Owens Lake	PO-PT/NS	
Mammoth Lakes	Mammoth Lakes	PO/NS	
Lee Vining	Mono Basin	PO/NS	
Simis Residence ††	Mono Basin	SI/NS	
Mono Shore	Mono Basin	HC/NS	
White Mountain	District	BK/RS	
NCORE	District	BK/RS	

* Monitor down temporarily due to lease cancellation by property owner.

** PM10 monitoring ended at Flat Rock May 2011 when monitor was moved to Mill Site. Flat Rock now used for meteorological monitoring and video capture only.

*** T-4, T-23 were special purpose monitors that were shutdown July and August 2012, respectively.

† T-7 and T27 are special purpose monitors that began operation in July and August 2012, respectively.

†† PM10 monitoring ended August 2008; meteorological monitoring ended June 2011.

Table 3. Criteria Pollutant Monitoring Purposes

MONITORING PURPOSE

BK - Background Level
HC - High Concentration
TP - Pollutant Transport
EX - Population Exposure
SPM - Special Purpose Monitor
RC - Representative Concentration
SO - Source Impact
TR - Trend Analysis
CP - Site Comparison

Site Name	Network	PM10	PM2.5
Dirty Socks *	Owens Lake	RC/SO	
Shell Cut	Owens Lake	RC/SO	
Flat Rock **	Owens Lake	RC/SO	
Bill Stanley	Owens Lake	RC/SO	
Olancha	Owens Lake	RC/EX	
Lone Pine	Owens Lake	RC/EX	
North Beach *	Owens Lake	RC/SO	
Lizard Tail	Owens Lake	RC/SO	
Keeler	Owens Lake	RC/EX	RC/EX
Mill Site *	Owens Lake	RC/SO	
T-4 ***	Owens Lake	HC/SPM	
T-7 †	Owens Lake	HC/SPM	
T-23 ***	Owens Lake	HC/SPM	
T-27 †	Owens Lake	HC/SPM	
Coso Junction	Owens Lake	RC/TP	
Mammoth Lakes	Mammoth Lakes	RC/EX	
Lee Vining	Mono Basin	RC/EX	
Simis Residence ††	Mono Basin	RC/SO	
Mono Shore	Mono Basin	HC/SO	
White Mountain	District	RC/BK	
NCORE	District	RC/BK	

* Monitor down temporarily due to lease cancellation by property owner.
** PM10 monitoring ended at Flat Rock May 2011 when monitor was moved to Mill Site. Flat Rock now used for meteorological monitoring and video capture only.
*** T-4, T-23 were special purpose monitors that were shutdown July and August 2012, respectively.
† T-7 and T27 are special purpose monitors that began operation in July and August 2012, respectively.
†† PM10 monitoring ended August 2008; meteorological monitoring ended June 2011.

Definitions

Background Level monitoring is used to determine general background levels of air pollutants.

Core-based Statistical Area (CBSA) is defined by the U.S. Office of Management and Budget as a statistical geographic entity consisting of the county or counties associated with at least one urbanized area/urban cluster of at least 10,000 population, plus adjacent counties having a high degree of social and economic integration. The two categories of CBSAs are metropolitan statistical areas and micropolitan statistical areas.

High Concentration monitoring is conducted at sites to find the highest concentration of an air pollutant in an area within a given monitoring network. A monitoring network may have multiple high concentration sites as a result of varying meteorology, source area variability, etc.

Metropolitan Statistical Area (MSA) is defined by the EPA and by the U.S. Office of Management and Budget as areas having at least one urbanized area of 50,000 or more population, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties.

Micropolitan Statistical Area (MiSA) is defined by the U.S. Census Bureau and the U. S. Office of Management and Budget as an area heaving one urbanized area or urban cluster of between 10,000 and 50,000 population.

Monitoring Objectives are the measures for determining the level of pollutant impacts from particular sources at particular sites, i.e., to determine the highest concentrations (HC) affecting specific places from sources; the impact from a particular source or set of sources (SI) in a given area; the impact caused by concentrations affecting specific populations (PO), communities, etc.; background level (BK) concentrations measured upwind of sources or not impacted by sources; areas impacted by transport of pollution (PT) generated from distant sources; measuring impacts to visibility, plants, or other welfare affects (VI).

Monitoring Planning Area (MPA) is defined by the EPA as a contiguous geographic area with established, well-defined boundaries, such as a metropolitan statistical area, county, or State, having a common area that is used for planning monitoring locations for PM2.5. MPAs may cross political boundaries, e.g., State, County, etc. MPAs are generally oriented toward areas with populations greater than 200,000.

Nonattainment Area is any area that does not attain the standard for at least one of the pollutants for which there are National Ambient Air Quality Standards (NAAQS).

Pollutant Transport is the movement of pollutant(s) between air basins or areas within an air basin. Pollutant transport monitoring is used to assess and address sources from upwind areas when those transported pollutant(s) affect neighboring downwind areas.

Transport monitoring can also be used to determine the extent of regional pollutant transport.

Population Exposure monitoring is conducted to represent the air pollutant concentrations to which a populated area is exposed.

Representative Concentration monitoring is conducted to determine pollutant concentrations over a homogeneous geographical area. These sites do not necessarily indicate the highest concentrations in an area for a particular pollutant.

Site Comparison monitoring is used to assess the effect of moving a monitoring location a short distance (approximately 2 miles or less) on measured pollutant levels. Some monitoring stations become unusable due to development, change of lease terms, eviction, etc. In these cases, attempts are made to conduct concurrent monitoring at both the old and new monitoring locations for a period of time in order to compare pollutant concentrations at both.

Source Impact monitoring is used to determine the impact of particular and significant sources of pollutant emissions on the air quality. Air pollutant sources may be stationary or mobile.

Spatial Scales define the concentrations within a given area that has relatively uniform land use and reasonably homogeneous geography. These scales are defined as follows:

> **Microscale** - defines an area with dimensions ranging from several meters up to about 100 meters (several yards up to 100 yards).
> **Middle Scale** - defines an area of up to several city blocks in size, with dimensions ranging from about 100 meters to 0.5 kilometers (100 yards to 1/3 mile)
> **Neighborhood Scale** - defines an area with dimensions in the 0.5 to 4.0 kilometer range (1/3 mile to 2.5 miles). Most of the District's sites have been determined to be neighborhood scale sites.
> **Urban Scale** - defines an area with dimensions on the order of 4 to 50 kilometers (2.5 miles to 30 miles).
> **Regional Scale** - usually defines rural areas and extends from tens to hundreds of kilometers (or miles).
> **National and Global Scale** - these measurement scales represent pollutant concentrations characterizing the nation and the globe as a whole.

Special Purpose Monitors are used for surveys to determine whether a permanent monitor need be installed. They are also used to determine whether an existing monitoring network provides sufficient coverage to an area for determining pollutant impacts to that area.

Trend Analysis monitoring is useful for comparing and analyzing air pollution concentrations over time. Trend analysis can show the progress or lack thereof in improving the air quality for a given area over a period of many years.

Monitored Pollutants and Meteorological Variables

PM_{10}

Medium-volume size selective inlet filter-based PM_{10} monitors (Rupprecht & Patashnick/Thermo Partisol Plus 2025) are or will be operated at four (4) sites. Monitoring at the sites is conducted on either the Federal one-in-three-day schedule or on a daily schedule. Filter-based monitors typically measure integrated 24-hour-average PM concentrations.

Continuous PM_{10} and $PM_{2.5}$ monitors (Rupprecht & Patashnick TEOM 1400a AB monitors) are operated in conjunction with filter-based monitors at three of the four filter-based sites. Continuous PM_{10} monitors alone are operated at an additional 12 fixed sites and an additional two continuous PM_{10} monitors in portable stations. The advantage of continuous PM_{10} monitors is that they are capable of measuring hourly pollutant concentrations. These continuous PM_{10} monitors are concentrated in areas of high PM_{10} impact: e.g. around the shoreline of Owens Lake, in the Town of Mammoth Lakes, at the site of maximum impact on the north shore of Mono Lake. Hourly resolution of PM_{10} concentrations enables the District to more accurately determine the source of the emissions, especially in short-term wind-event driven emissive areas like Owens and Mono Lakes.

$PM_{2.5}$

The District operates one collocated $PM_{2.5}$ monitoring station at the Keeler monitoring site. The monitors are medium volume filter-based Federal Equivalent Method (FEM) samplers (Rupprecht & Patashnick Partisol Plus 2025 with a very sharp-cut cyclone (VSCC) for $PM_{2.5}$). The primary monitor operates on the Federal 1-in-3-day schedule and the collocated monitor operates on the Federal 1-in-12-day schedule. The District also operates one continuous $PM_{2.5}$ monitor at the Keeler station that collects hourly PM2.5 concentrations. It should be noted that, as the entire District's population is less than the minimum requirements (50,000) for a metropolitan statistical area under 40 CFR 58 Appendix D, Section 4.7, no additional PM2.5 monitoring locations are required. The Keeler site monitors the highest concentrations of PM10 for a populated community in the District and state and local staff determined that the District's PM2.5 station should be located this site, which provides data for population-oriented representative PM2.5 particulate concentrations.

Meteorology

The District operates meteorological sensors at nearly all permanent fixed monitoring stations. Meteorological variables measured include wind speed, wind direction and ambient temperature. In addition, at some locations relative humidity, barometric pressure and precipitation are also monitored.

Network Description

Owens Lake

The Owens Lake monitoring network consists of a combination of twelve (12) ambient air monitoring stations: seven (7) stations ring the lake along the historic shoreline, one of which is a population-based station, located at Keeler; two other population-oriented sites are located in the communities of Lone Pine north of the lake and Olancha, south of the lake. An additional monitor is located 20 miles south of the lake at Coso Junction. This station is used for modeling of Owens Lake plume trajectories and is used to monitor local source impacts in the Coso Junction Planning Area. Each station utilizes an R&P TEOM continuous monitor for PM10 measurements. Ten (10) of the ambient air monitoring stations in the Owens Lake network are designated as SLAMS sites.

Dust Identification Program

In addition to the ten SLAMS stations around the Owens Lake, the District operates two air quality stations: one at the locations designated T7 on the south end of the lake, and another, designated T27 toward the east central area of the lake; and four meteorological stations. These are special purpose monitors used to determine dust source areas requiring mitigation and are part of the District's Dust Identification Program. In addition, the program consists of a series of approximately 175 sand motion sensors (Sensits) and accompanying sand collection devices (Cox Sand Catchers (CSCs)) operated by the District as well as 48 Sensit/CSC sites operated by the City of Los Angeles. The network also utilizes dust observations made by District personnel during wind events and eleven (10) camera stations with a total of 16 cameras collecting images of the lakebed every thirty seconds during daylight hours. This system coupled with the model and the SLAMS stations described above enables the District to pinpoint emissive areas of the lakebed that may cause or contribute to exceedances of the Federal PM_{10} standard. A map detailing the locations of the monitoring sites used for the Dust ID program is presented in Figure 4. Please note stations that are temporarily down due to lease cancelation by the landowner are marked with a horizontal line through the site name.

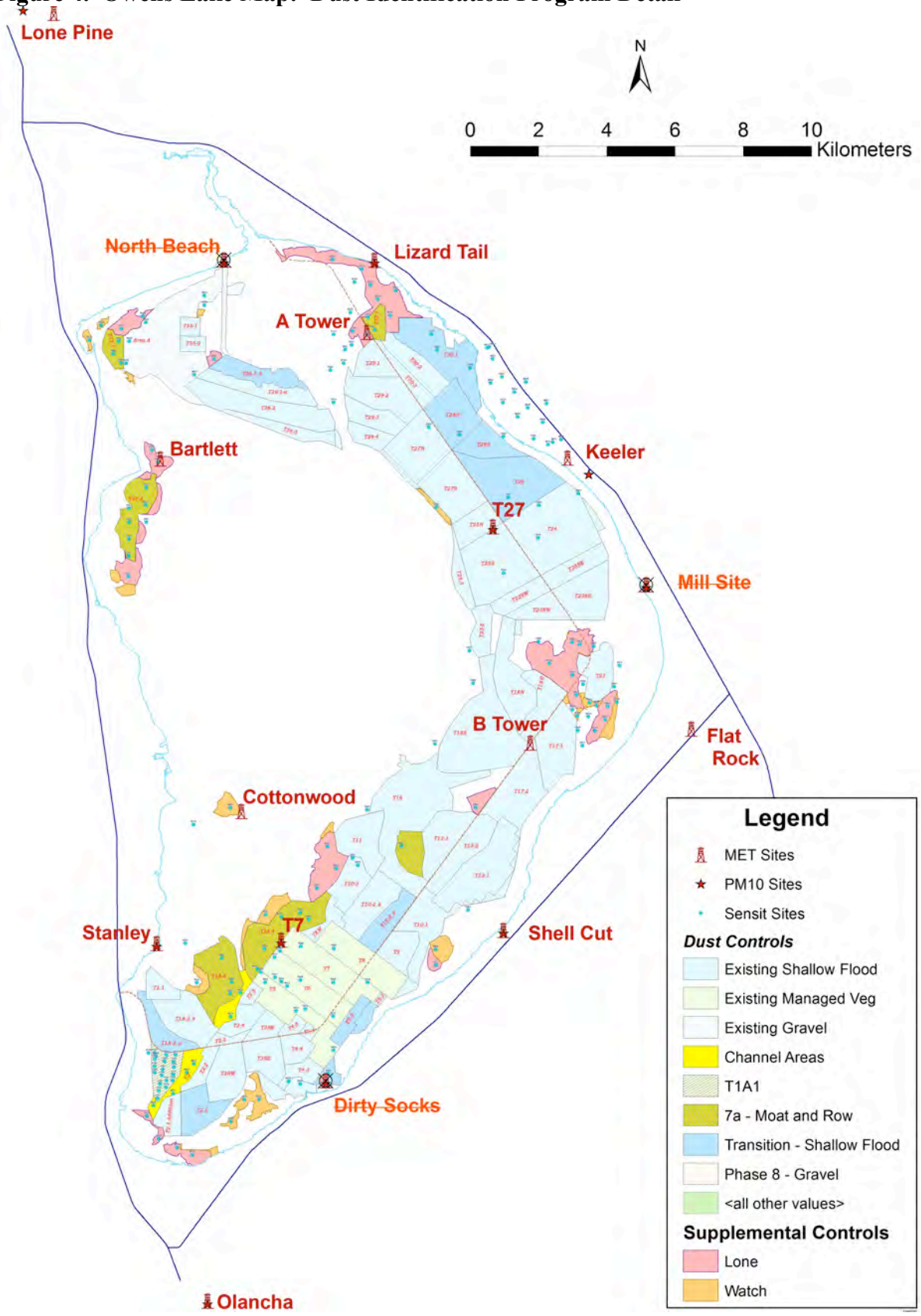
Mammoth Lakes

The Mammoth Lakes monitoring network consists of one monitoring station located in the Town of Mammoth Lakes. This station utilizes an R&P TEOM for hourly-resolved PM_{10} concentrations and an R&P 2025 Partisol Sequential Sampler operating on the one-in-three-day schedule for 24-hour integrated PM_{10} concentration data. This station is used by the District to determine compliance with the Federal PM_{10} standard for this previously nonattainment community. The hourly resolved data allows Town personnel to forecast and determine "no-burn" days for wood stove operators in order to maintain compliance with the Federal PM_{10} standard.

NCORE

The District has also been asked by EPA to install and operate a rural NCORE station. This station has been installed at the District's White Mountain Research Station monitoring site. The station was online April 1, 2011. Further details on the station are contained in Appendix B, which contains a standalone monitoring plan for the District's NCORE station.

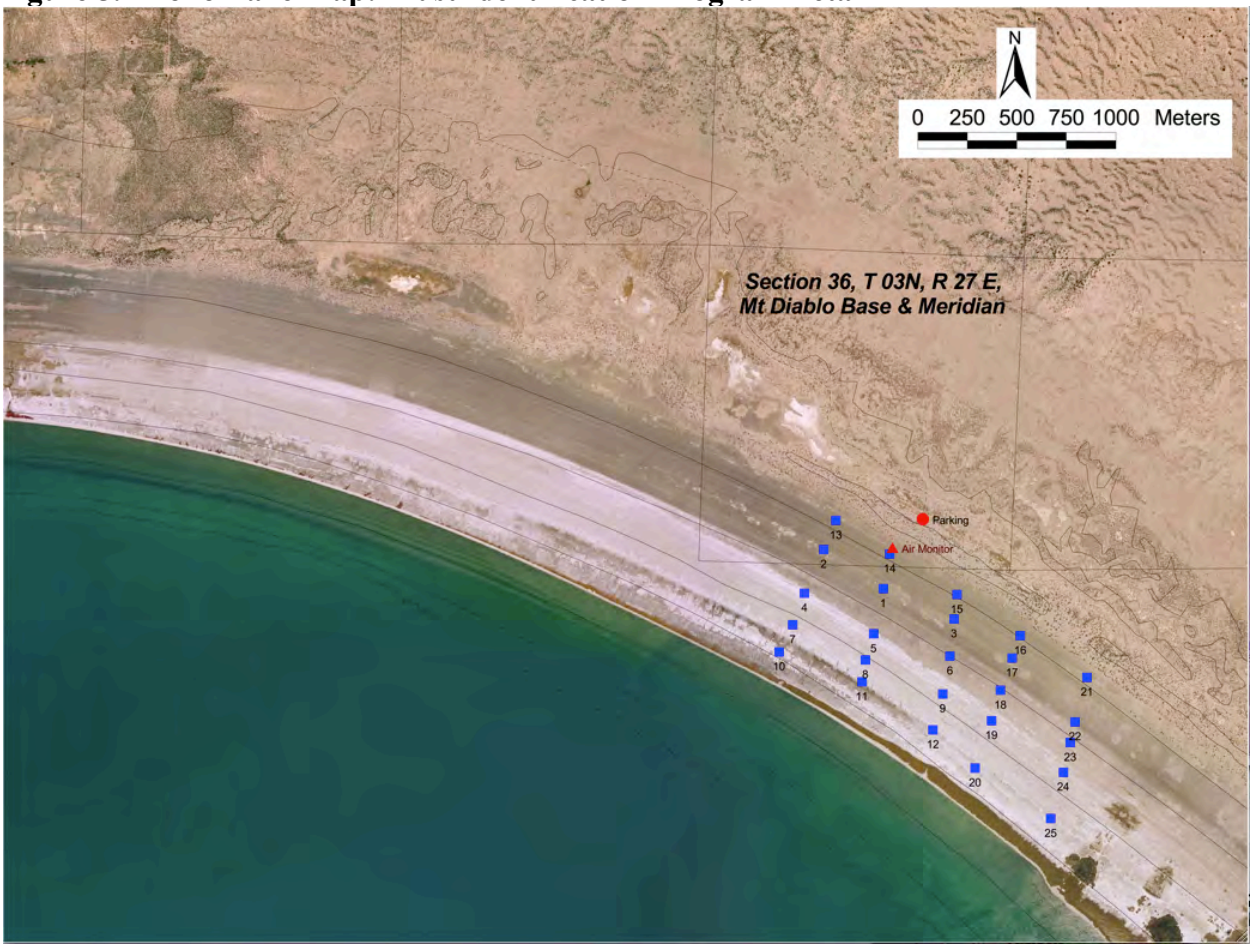
Figure 4. Owens Lake Map: Dust Identification Program Detail



Mono Lake

The Mono Lake monitoring network consists of three monitoring stations: Lee Vining, Simis Ranch, and Mono Shore. Through August of 2008, PM_{10} concentrations were collected using BGI PQ200 monitors located at Simis Ranch and Mono Shore. PM_{10} concentrations at Lee Vining, a population-based site, are also collected using an R&P 2025 Partisol Sequential Sampler. The BGI monitors at Simis Ranch were removed and not replaced due to the fact that no exceedances had been measured there since 1996, and a point-of-maximum-impact site, Mono Shore, being outfitted with a PM_{10} monitor in 1999. The BGI monitors at Mono Shore were replaced in 2008 with an off-the-grid solar-powered R&P TEOM PM_{10} continuous monitor. The TEOM provides hourly-resolved PM_{10} concentrations and has provided the District with the opportunity to develop a Dust ID program at Mono Lake. This Dust ID network consists of twenty-five (25) sites with CSCs. Ten (10) of those sites have collocated Sensits associated with them. This network is used to measure the mass of saltating particles to estimate sand flux rates across a $2km^2$ area. The Mono Lake Dust ID network is presented in Figure 5.

Figure 5. Mono Lake Map: Dust Identification Program Detail



4.0 Special Programs

The District periodically conducts special monitoring programs for rule compliance and pollutant level assessment. The data gathered are for informational purposes initially and may lead to designation of special purpose monitors, as defined under Title 40 CFR 58.20, or to permanent monitoring locations in the District's network, or to nothing beyond the initial purpose of information gathering. During the 2013 monitoring year, the District will be conducting the special programs listed below.

Portable PM10 Monitoring
Staff determined there was a need for small portable TEOM monitors that could be transported to monitoring locations and set up for short-term episode PM_{10} monitoring. Staff has constructed two portable TEOM stations each of which utilizes a propane-fired generator for power. The stations can operate for more than five days on two small tanks of propane. The stations have been successfully operated during several episodes on and around Owens Lake from February 2010 to the present. Most recently these stations have been in operation at the Boulder Creek RV Park and Duck Pond stations around Owens Lake.

5.0 Recent or Proposed Modifications to Network

Owens Lake
Two on-lake PM_{10} monitoring stations, designated T4 and T23, were removed from the network in July and August 2012, respectively. Two additional on-lake PM10 monitoring stations, designated T7 and T27, were installed in the Owens Lake Network in July and August 2012, respectively, as well. Each of these stations consisted of one TEOM 1400ab continuous PM_{10} monitor in a temperature-controlled shelter and meteorological sensors for wind speed and direction. The purpose of these special purpose monitors (SPMs) is to measure PM_{10} emissions near the remaining source areas on the lakebed and to further refine the District's Dust Identification Program model.

During May 2011, the PM10 monitoring system was shut down at the Flat Rock station and moved to the Mill Site. The Flat Rock station was being impacted by dust emitting areas between the station and the 3,600-foot regulatory shoreline. An analysis was conducted and District staff determined that source areas from the lakebed impacted Flat Rock infrequently and that the Shell Cut station would also typically monitor those lakebed source areas. The District had a critical need to fill a gap in the network on the east shore of the lake south of Keeler in order to measure lakebed emission impacts caused by winds from the west, thus the PM10 monitor at Flat Rock was moved to the Mill Site location. Within the week after the move, the Mill Site monitor measured an exceedance of the Federal PM10 standard from lakebed sources driven by winds from the west.

In November 2012, the leases for the Dirty Socks, Mill, and North Beach monitoring stations were canceled by the owner, the Los Angeles Department of Water & Power. These stations, marked, "~~Station,~~" on the Dust ID map (Figure 4), and "Station," on the Owens Lake detail

map (Figure 2), were removed from their locations and, thus, are temporarily down due to this lease cancellation. The District is in the process of securing new leases, for monitoring locations within 300 meters of the old locations, on lands administered by the California State Lands Commission (CSLC) and by the U.S. Bureau of Land Management (BLM). It is anticipated that monitoring will begin at these new locations by the end of 2013.

Coso Junction
The Coso Junction monitoring station serves to measure both locally-produced PM10 for the Coso Junction Management Area, and as a transport site for windblown PM10 from Owens Lake to the north. When the Area was designated, " in attainment," in 2010, it was noted that the station could be affected by local sources around the monitoring station. In order to address this concern, monthly reports were produced for the first year of operation after the designation took place. During that period, the local sources were covered with gravel and/or cinders and the areas where vegetation had died off were watered and replanted with native plant species. Additionally, a camera was installed at the site to help with monitoring emissions from local sources. Collection of valid data resumed August 1, 2010, at the Coso Junction PM10 monitoring station.

Mammoth Lakes
No changes or modifications are anticipated for the 2013 monitoring year.

Mono Lake
The District has operated monitoring stations in the Mono Basin area for approximately 18 years. Over the last year, District staff assessed the Mono Lake monitoring network and determined that some changes needed to be made. First, staff determined it was necessary to collect hourly-resolved PM_{10} data at the Mono Lake North Shore site, especially during the episodic dust storms at the Lake. Second, it was determined that staff needed to operate the network and utilize resources more efficiently.

In order to address the first determination, a continuous TEOM PM_{10} monitor was installed in May 2008 at the Mono Lake North Shore site to facilitate the collection of hourly-resolved PM_{10} data. An additional goal was set for the Mono Shore site to operate the continuous PM_{10} monitor through the entire year, rather than seasonally as had been done with the filter-based monitors.

In addressing the second determination, staff noted that no PM_{10} violations had been measured at the Simis Ranch site since August 31, 1996. The District had collected 12 years of data subsequent to that measured violation. As a result, the decision was made to cease the collection of PM_{10} data at the Simis Ranch site as of August 2008. Meteorological monitoring at the Simis Ranch site was suspended in July 2011.

The North Shore site is off the power grid and consists of a large solar power array and battery system. In order to minimize power consumption, the TEOM is housed in a custom-designed Zomeworks Cool Cell. The Cool Cell regulates the temperature of the Cell housing the TEOM passively using a water radiator and reservoir system to regulate the Cell temperature. The continuous monitor and the seasonally (non-winter) operating filter-based medium volume PM_{10} monitors (BGI PQ200) were operated side-by-side from May through August 2008 in order to provide comparison data between the two different monitoring methods. After that comparison

period, the filter-based monitors were shut down and removed from service, leaving the continuous PM_{10} monitor as the primary monitor for that station.

Future changes to the Mono Lake network include the installation of a continuous TEOM PM10 monitor in the community of Lee Vining. The District has operated a filter-based PM_{10} monitor in Lee Vining, located on the southwest side of Mono Lake, for over 15 years. Plans are to install a continuous TEOM PM_{10} monitor in Lee Vining station in 2013-14.

National Core Multipollutant Monitoring Station (NCORE)

The District was chosen by EPA Region IX staff to install and operate one of the EPA NCORE monitoring stations. The NCORE network consists of 75-plus monitoring stations around the nation that will be used by EPA for determining national monitoring and regulatory strategies. Seven monitoring stations are to be placed in California and the District was chosen to operate one of them: a rural NCORE site. These sites will be funded by EPA for capital equipment and operation and maintenance.

The first phase of funding began with the 2008 calendar year. Funds were received for the procurement of the prescribed monitoring equipment which includes: a low-level carbon monoxide monitor (CO), a low-level sulfur dioxide monitor (SO2), a low-level reactive nitrogen compounds monitor (NOy), a low-level ozone monitor (O3), and a calibration system for the monitors. The EPA also provided the District with funds for the procurement of a monitoring station enclosure in which to house the NCORE monitoring equipment. The District's NCORE site is located at the White Mountain Research Station, east of Bishop, near the current berth of the District's Portable Monitoring Station. Final approval of the site by EPA headquarters was given in mid-2009. Installation of the station and procurement and installation of the remaining equipment took place throughout 2012. Data of record have been collected since January 1, 2013. The station is scheduled for completion September 1, 2013.

6.0 Minimum Monitoring Requirements

The District's jurisdictional boundaries encompass no Metropolitan Statistical Areas (MSA) as defined by the U.S. Office of Management and Budget and the U. S. Census Bureau (population greater than 50,000). The District does, however, contain Monitoring Planning Areas defined as "areas determined to be (potentially) in violation of the PM2.5 NAAQS." The District is also required to operate at least one monitor in each of the three (3) PM_{10} nonattainment areas and in the one (1) attainment area (the Coso Junction Area was designated attainment in October 2010). The District's network meets or exceeds the minimum monitoring requirements for criteria pollutants as detailed below. Please note that the Coso Junction Management Area (formerly the Searles Valley Nonattainment Area) encompasses the northern portion of the Searles Valley, immediately north of Pioneer Point, as well as the Rose Valley in the southwestern portion of Inyo County.

PM_{10}

Nonattainment Area Monitors	Min. No. Monitors Required	No. of Monitors Active
Coso Junction	1	1
Owens Lake	1	7*
Mammoth Lakes	1	2
Mono Basin	1	2

PM2.5

MPA	Min. No. Monitors Required	No. of Monitors Active
Keeler	1	2+1 collo.

* Number excludes the three stations down temporarily due to lease cancellation.

7.0 Data Certification and Reporting

CARB, as the District's PQAO, has delegated the responsibilities for data collection, validation and reporting to the District, as the monitoring organization. District staff ensures that all data and statistical reports are submitted to the Air Quality System, the EPA's national air monitoring database, and that the data are certified annually, as required by regulation. Precision and accuracy reports are generated annually by the District and submitted to AQS. The 2012 District dataset in AQS was certified by the District on April 25, 2013.

APPENDIX A

Site Information Summaries
Site Reports

Table A.1

Great Basin Unified Air Pollution Control District
Site Specifie Information

Site Name	Network	AQS Number	Pollutants Monitored	Start Date
Dirty Socks *	Owens Lake	06-027-0022	PM10, Met.	Jun-99
Shell Cut	Owens Lake	06-027-0025	PM10, Met.	Jan-01
Flat Rock **	Owens Lake	06-027-0024	PM10, Met.	Jan-01
Bill Stanley	Owens Lake	06-027-0026	PM10, Met.	Mar-02
Olancha	Owens Lake	06-027-0021	PM10, Met.	Aug-95
Lone Pine	Owens Lake	06-027-0004	PM10, Met.	Jan-80
North Beach *	Owens Lake	06-027-0029	PM10, Met.	Nov-08
Lizard Tail	Owens Lake	06-027-0028	PM10, Met.	Feb-08
Keeler	Owens Lake	06-027-1003	PM10, PM2.5, Met.	Jul-94
Mill Site *	Owens Lake	06-027-0030	PM10, Met.	May-11
T-4 ***	Owens Lake	SPM	PM10	Mar-10
T-23 ***	Owens Lake	SPM	PM10	Mar-10
T-7 †	Owens Lake	SPM	PM10	Jul-12
T-27 †	Owens Lake	SPM	PM10	Aug-12
Coso Junction	Owens Lake	06-027-1001	PM10, Met.	Mar-79
Mammoth Lakes	Mammoth Lakes	06-051-0001	PM10, Met.	Apr-84
Lee Vining	Mono Basin	06-051-0005	PM10, Met.	Jan-81
Simis Residence ††	Mono Basin	06-027-0007	Met.	Nov-81
Mono Shore	Mono Basin	06-027-0011	PM10, Met.	Jan-00
White Mountain	District	06-027-0002	PM10, Met.	Apr-06
NCORE	District	06-027-0002	O3, CO, SO2, NOy	Apr-12

* Monitor down temporarily due to lease cancellation by property owner.
** PM10 monitoring ended at Flat Rock May 2011. Flat Rock now used for meteorological monitoring and video capture only.
*** T-4, T-23 were special purpose monitors that were shutdown July and August 2012, respectively.
† T-7 and T27 are special purpose monitors that began operation in July and August 2012, respectively.
†† PM10 monitoring ended August 2008; meteorological monitoring ended June 2011.

Table A.2

Great Basin Unified Air Pollution Control District
Site Specifie Information
Pollutant Monitors

Site Name	Monitoring	Pollutants Monitored									
		R&P Partisol 2025 Sequential PM10		R&P TEOM Continuous PM10		R&P FDMS-TEOM Continuous PM10		R&P Partisol 2025 Sequential PM2.5		R&P TEOM Continuous PM2.5	
	Frequency	P code	81102	P code	81102	P code	81102	P Code	88101	P Code	88101
		M code	127	M code	079	M Code	079	M Code	145	M Code	181
		POC	Serial No.	POC	Serial No.	POC	Serial No.	POC	Serial No.	POC	Serial No.
Dirty Socks *	Daily			2	24918						
Shell Cut	Daily			2	24923						
Flat Rock **	Daily			2	**						
Bill Stanley	Daily			1	23572						
Olancha	Daily			2	21292						
Lone Pine	Daily					4	24928				
North Beach *	Daily			1	24982						
Lizard Tail	Daily			1	24983						
Keeler	Daily	6	21442	4	24786			1	21135	1	24922
Keeler Collo. Mon.	Daily	7	21183	UA	21002			2	21127		
Mill Site *	Daily			1	24925						
T-4 ***	Daily			SPM	24981						
T-7 †	Daily			SPM	24981						
T-23 ***	Daily			SPM	23573						
T-27 †	Daily			SPM	23573						
Coso Junction	Daily			4	22618						
Mammoth Lakes	Daily	5	21584			1	20280				
Lee Vining	1-in-3	3	21029								
Simis Residence ††	1-in-3										
Mono Shore	Daily			1	24920						
White Mountain	Daily					1	24711				
NCORE	1-in-3	1	21487					1	21579		

Site Name	Monitoring	Pollutants Monitored									
		Thermo 43i-TLE SO2 Analyzer		Thermo 49i Ozone Analyzer		Thermo 48i-TLE CO Analyzer		Thermo 42y NOy Analyzer		R&P Partisol 2025 PM10-PM2.5	
	Frequency	P code	42401	P code	44201	P code	42101	P Code	42602	P Code	86101
		M code	060	M code	047	M Code	054	M Code	074	M Code	176
		POC	Serial No.	POC	Serial No.	POC	Serial No.	POC	Serial No.	POC	Serial No.
NCORE Additional Pollutants	Hourly 1-in-3	1	917736524	1	1120848986	1	917736525	1	917736523	1	See Above

* Monitor down temporarily due to lease cancellation by property owner.
** PM10 monitoring ended at Flat Rock May 2011. Flat Rock now used for meteorological monitoring and video capture only.
*** T-4, T-23 were special purpose monitors that were shutdown July and August 2012, respectively.
† T-7 and T27 are special purpose monitors that began operation in July and August 2012, respectively.
†† PM10 monitoring ended August 2008; meteorological monitoring ended June 2011.

Table A.3

GBUAPCD QUALITY ASSURANCE AUDITS
2012

	GBUAPCD TEOM Audits 2012			
Site	**First Quarter**	**Second Quarter**	**Third Quarter**	**Fourth Quarter**
Bill Stanley	3/14/12	6/27/12	9/28/12	11/15/12
Coso Junction	3/14/12	6/27/12	8/15/12	11/14/12
Dirty Socks	1/30/12	6/13/12	9/28/12	11/15/12
Keeler 1 PM2.5	3/21/12	6/27/12		11/15/12
Keeler 3 Prim PM10	3/21/12	6/27/12	8/15/12	11/15/12
Lizard Tail	1/27/12	6/20/12	8/16/12	11/14/12
Lone Pine	3/14/12	6/13/12	9/28/12	11/15/12
Mammoth	3/8/12	6/29/12	8/22/12	11/6/12
Mill Site	1/30/12	6/13/12	9/28/12	11/15/12
Mono Shore	3/8/12	6/29/12	8/22/12	11/6/12
North Beach	1/27/12	6/20/12	8/16/12	11/14/12
Olancha	3/14/12	6/27/12	8/15/12	11/14/12
Shell Cut	1/30/12	6/13/12	9/28/12	11/15/12
T-23	1/30/12	6/20/12	8/16/12	
T-27				11/14/12
T-4	1/30/12	6/20/12		
T-7			8/16/12	11/14/12
WMRS	1/12/12	6/19/12	7/26/12	11/27/12
Keeler 2 Collo PM10	Down	Down	Down	Down

	GBUAPCD Partisol Audits 2012			
Site	**First Quarter**	**Second Quarter**	**Third Quarter**	**Fourth Quarter**
Keeler pm10 pri	3/21/12	6/27/12	8/15/12	11/15/12
Keeler pm2.5 co	3/21/12	6/27/12	8/15/12	11/15/12
Keeler pm2.5 pri	3/21/12	6/27/12	8/15/12	11/15/12
Lee Vining	3/8/12	6/29/12	8/22/12	11/6/12
Mammoth	3/8/12	6/29/12	8/22/12	11/6/12

GBUAPCD Meteorological Audits 2012			ARB Audits of GBUAPCD Sites	
Site	**First Semi-Annual**	**Second Semi-Annual**	**Site**	**Date**
A-Tower	5/9/12	12/20/12	Dirty Socks	10/23/12
Bill Stanley	5/3/12	10/18/12	Coso Junction	7/12/12
B-Tower	5/2/12	11/28/12	Keeler 1	10/25/12
Cottonwood	5/24/12	12/20/12	Keeler 3	10/25/12
Dirty Socks	4/24/12	10/18/12	Lizard Tail	10/24/12
Flat Rock	4/24/12	10/18/12	Lone Pine	10/25/12
Keeler	4/17/12	10/17/12	Mammoth TEOM	9/19/12
Lizard Tail	5/9/12	10/17/12	Mill	10/24/12
Lone Pine	4/17/12	10/19/12	Mono Shore	9/20/13
Mammoth	5/16/12	10/10/12	North Beach	10/24/13
Mill	4/17/12	10/18/12	Olancha	10/23/12
Mono Lake Shore	5/16/12	10/10/12	Bill Stanley	10/23/12
North Beach	5/9/12	10/17/12	Shell Cut	10/24/12
Olancha	5/3/12	10/17/12	WMRS	9/19/12
Shell Cut	4/24/12	10/18/12	Lee Vining	9/20/12
T-23	5/2/12		Keeler 2.5 pri	10/25/12
T-27		10/19/12	Keeler 2.5 co	10/25/12
T-4	5/2/12		Keeler 10 pri	10/25/12
T-7		10/19/12	Mammoth Partisol	9/19/12
WMRS	4/16/12	9/27/12		

APPENDIX B

NCORE Station Monitoring Plan

Great Basin Unified
Air Pollution Control District

2013 Ambient Air Monitoring
Network Plan
For
National Core (NCORE) Monitoring Station

located at
White Mountain Research Center
Bishop, California

July 15, 2013

Great Basin Unified Air Pollution Control District
157 Short Street
Bishop, California 93514

National Core (NCore) Multi-pollutant Monitoring Stations:

In October 2006 the United States Environmental Protection Agency (EPA) issued final amendments to the ambient air monitoring regulations for criteria pollutants. These amendments are codified in 40 CFR parts 53 and 58. The purpose of the amendments was to enhance ambient air quality monitoring to better serve current and future air quality needs. One of the most significant changes in the regulations was the requirement to establish National Core (NCore) multi-pollutant monitoring stations. These stations will provide data on several pollutants at lower detection limits and replace the National Air Monitoring Station (NAMS) networks that have existed for several years. The final network plan was to be submitted to EPA by July 1, 2010 and the stations were to be operational by January 1, 2011. Delays in funding and procurement of equipment have resulted in a delay of the start of monitoring at the District's NCore station until January 1, 2013.

The NCore Network addresses the following monitoring objectives:

- timely reporting of data to the public through AIRNow, air quality forecasting, and other public reporting mechanisms
- support development of emission strategies through air quality model evaluation and other observational methods
- accountability of emission strategy progress through tracking long-term trends of criteria and non-criteria pollutants and their precursors
- support long-term health assessments that contribute to ongoing reviews of the National Ambient Air Quality Standards (NAAQS)
- compliance through establishing nonattainment/attainment areas by comparison with the NAAQS
- support multiple disciplines of scientific research, including; public health, atmospheric and ecological

In 2007, 2010, and 2011, EPA provided funding to the Great Basin Unified Air Pollution Control District (the District) to establish an NCore station in the Eastern Sierra region of California. After evaluating the existing network, historical data, meteorology, and topography the District recommends the following changes to its air monitoring network to become effective July 1, 2009, and implemented by January 1, 2010:

1) Establish an NCore multi-pollutant monitoring station in the Eastern Sierra region at the White Mountain Research Center (formerly Station) (WMRC), 3000 East Line Street, Bishop, California. The location meets the objective for a rural NCore site and meets regional scale criteria for $PM_{2.5}$, PM_{10}, ozone (O_3), total reactive nitrogen compounds (NO_y), and carbon monoxide (CO).

2) For the near-term, collocate the NCore station with the District's existing Portable monitoring station, which collects data for PM10 (continuous), wind speed, wind direction, ambient temperature, and relative humidity.

Monitoring Objective
Determine compliance with NAAQS; observe pollution trends for national data analysis, provide pollution levels for daily index reporting; and provide data for scientific studies.

Table 1 Monitors

Monitor Type	Designation	Analysis Method	Frequency of Sampling
Carbon Monoxide (CO)	NCore	Automated Reference Method utilizing trace level non-dispersive infrared analysis.	Continuously
Sulfur Dioxide (SO_2)	NCore	Automated Equivalent Method utilizing trace level UV fluorescence analysis	Continuously
PM_{10} TEOM	SLAMS	Automated Equivalent Method utilizing Tapered Element Oscillating Microbalance/gravimetric analysis	Continuously
Total Reactive Nitrogen (NO_y)	NCore	Automated trace level chemiluminescence analysis.	Continuously
Meteorological	SLAMS	Air quality measurements approved instrumentation for wind speed, wind direction, humidity, temperature	Continuously
Ozone (O_3)	NCore	Automated trace level Equivalent Method utilizing an Ultraviolet Photometer	Continuously

Quality Assurance Status
All Quality Assurance procedures shall be implemented in accordance with 40 CFR 58, Appendix A. Quality Assurance Project Plans from the CARB and the District cover PM_{10}, $PM_{2.5}$, and meteorological measurements. For the trace level instruments, the quality assurance project plan and standard operating procedures (SOPs) utilized currently by the CARB will be used for each new instrument in the project. The first annual performance evaluation of the District's NCORE station is scheduled for September 2013, and will be conducted by CARB QA staff.

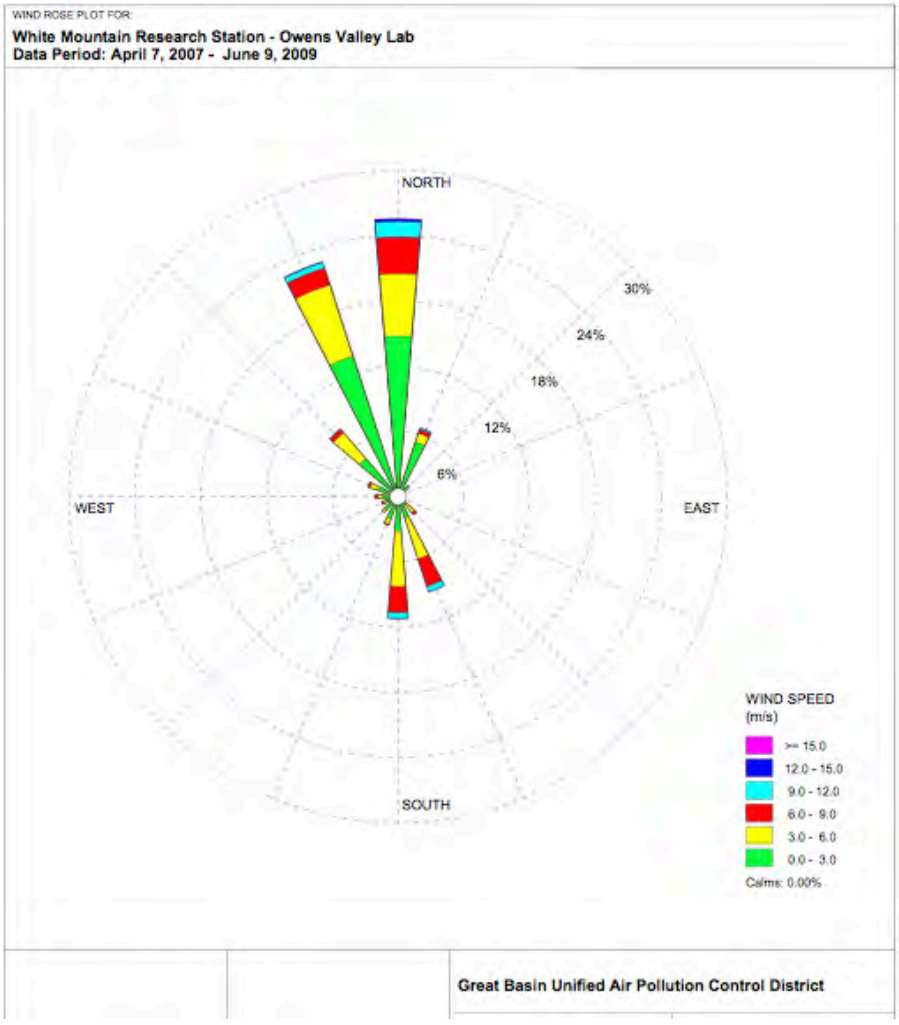
Area of Representativeness
40 CFR Part 58 Appendix D provides design criteria for ambient air monitoring. The monitoring objective for the NCore site is to produce data that represents a large area and therefore the spatial scale of the site is important. The spatial scale defines the physical dimensions of the air parcel nearest to a monitoring site throughout which actual pollutant concentrations are reasonably similar. It is determined by the characteristics of the area surrounding the air monitoring site and the site's distance from nearby air pollution sources such as roadways, factories, etc. In the case of rural NCore stations, which are to be located to determine general background concentrations levels, the spatial scales to be used are regional or larger. Table 2 shows the area of representativeness for each pollutant for the WMRC site.

Table 2: Spatial Scales for Each Pollutant

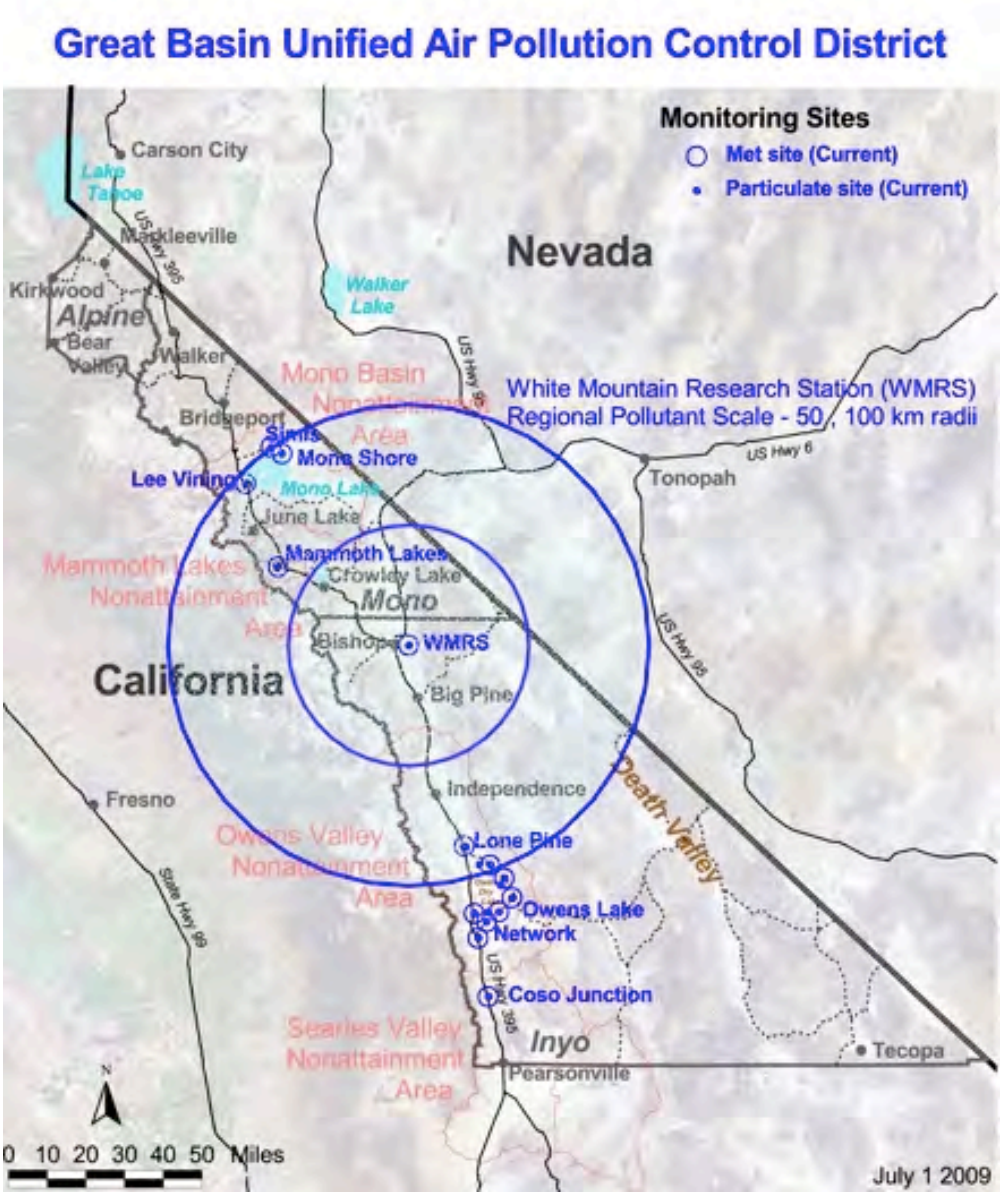
Pollutant	Spatial Scale	Comments
NO_y	Regional Scale	Same scale as used for O_3
CO	> Middle Scale	No Regional scale for CO
SO_2	> Neighborhood Scale	No Regional scale for SO_2
PM_{10}	> Neighborhood Scale	No Regional scale for PM_{10}
O_3	Regional Scale	Same scale as used for NO_y

For regional scale the area covered is tens of kilometers to hundreds of kilometers.

There are no MSAs within the District's current monitoring network due to the sparse population in this high desert setting, approximately 2 people per square mile. On a 10 km scale the land use varies from riparian areas along the Owens River 0.6 kilometers west of the site to light industry, small commercial, and residential in the City of Bishop (population 4,000) 5 kilometers west of the site. The topography of the area varies from high desert to mountain peaks.



The White Mountain Research Center's Owens Valley Laboratory, where the NCore monitoring station is located, is in the Owens Valley, a high-desert valley, the floor of which is at an average elevation of 4,000 feet above mean sea level. The valley is open north to south and is bordered on the east by the White Mountains that rise from the valley floor to an elevation of 10,000 feet, with peaks up to 14,000 feet. The valley is bordered on the west by the Sierra Nevada range, which rises in elevation up to 14,000 feet. As can be seen from the District map and the area-wide view below, the NCore site is located East of the City of Bishop and east of the developed area around the City. The wind rose above indicates the prevailing wind directions of north and south, up and down the Owens Valley. The placement of the NCore site east of Bishop provides an excellent location for measuring background pollutant concentrations as there are no major pollution sources, other than particulate matter, for 100km.



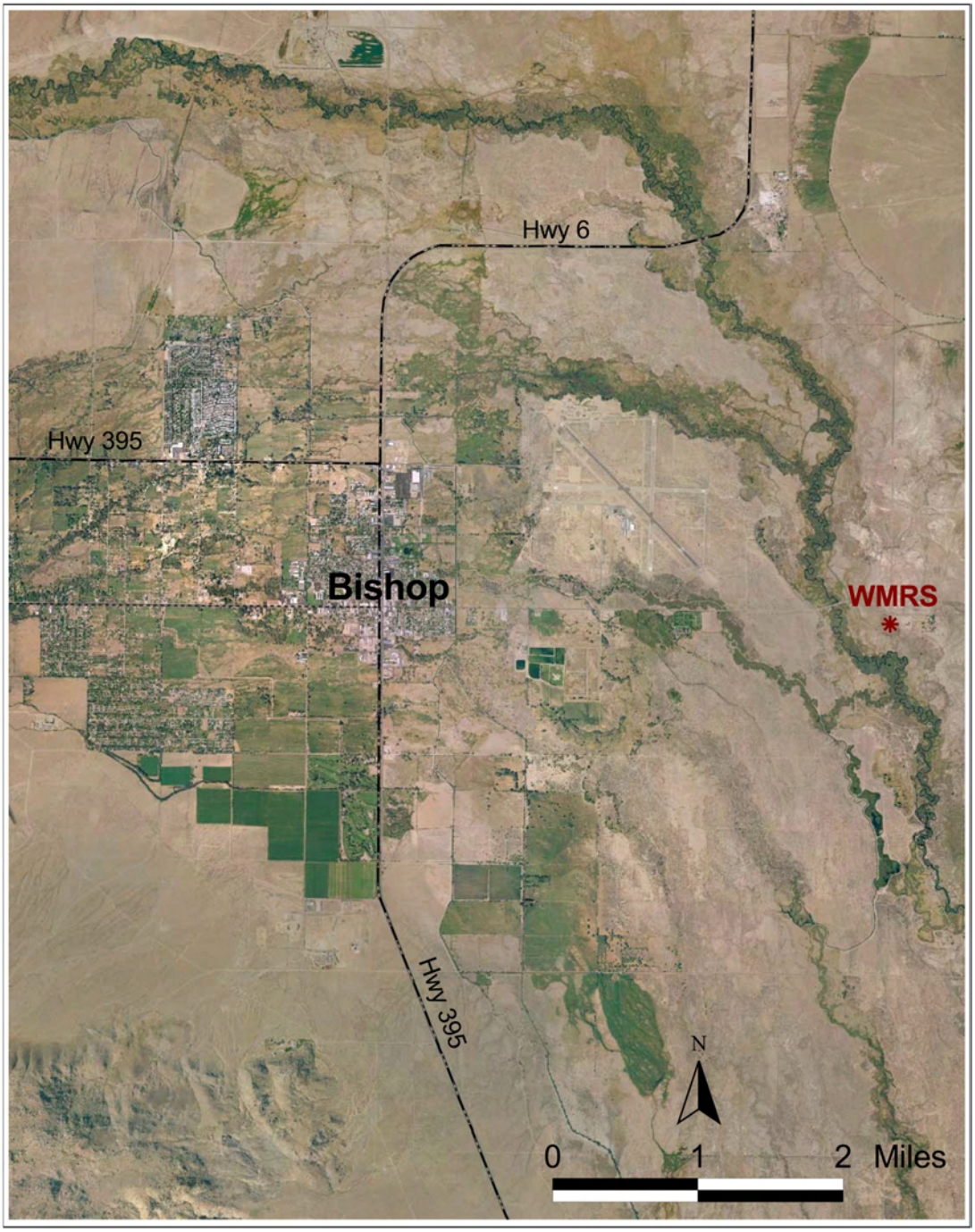
White Mountain Research Center (formerly Station)
Regional Pollutant Scale 50 and 100 km radii

The Owens Valley, Mono Basin, and Mammoth Lakes Nonattainment areas have been designated as such due to PM_{10} concentrations that exceed the Federal standard of 150µg/m3. The sources of these concentrations are wind-blown dust from the exposed lakebeds of the Owens and Mono lakes and wintertime wood smoke and road cinders, in the case of Mammoth Lakes. The PM_{10} influence around Mono Lake is largely restricted to the immediate basin by the topography. The influence around Owens Lake is mostly caused by north winds driving the dust south. Occasional south wind storms will drive the dust northward, but the impacts generally reach only to the community of Independence, 20 miles north of Owens Lake and 40 miles south of the station at the White Mountain Research Center. During north wind events, occasional dust may impact the station from the Chalfant and Hammil Valleys from agricultural fields not properly mitigated.

White Mountain Research Station
Topographic Regional Map (90 km radius shown)

Site Description and Spacing:

Site Name: White Mountain Research Center
AQS ID: 06-027-0002
Location: (WMRC **-** 3000 East Line Street) NCore Station – 200 Poleta Road
County: Inyo
GPS Coordinates: 37°21'38" North Latitude, 118°19'50" West Longitude
Date Established: April 7, 2006
Inspection Date: August 20, 2009
Inspection By: Catherine Brown, EPA IX
Site Approval Status: Approved



The station is located on the grounds of the University of California White Mountain Research Center. The location is in the northeast portion of Inyo County and is approximately 0.6 km east of the Owens River and 5 km east of Bishop, California.

NCore and $PM_{2.5}$ SLAMS Siting Criteria

Appendix E to 40 CFR Part 58-*Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring* contains specific location criteria applicable to NCore and SLAMS siting. The following measurements and data were obtained for evaluation of compliance with the criteria.

1. **Horizontal Placement of Sampling Probes:**
   The gaseous instruments are located in an 8'w x 8' h x 20'l air monitoring shelter located in an open area. The nearest building is the WMRC maintenance building approximately 150 meters east of the station. The sample probe inlets are installed approximately 4 meters above the ground. The Districts Portable monitoring station is placed next to the NCore air monitoring shelter and includes a 10-meter telescoping meteorological tower.

   Manual particulate samplers to be used for the NCore program will be placed on the metal monitoring platform adjacent to the NCore shelter. The height of the inlets of the filter-based particulate samplers above ground is approximately 5 meters. The inlet for the continuous PM_{10} monitor in the Portable station is approximately 1.5 meters above the roof and approximately 4.25 meters above the ground. Inlets for the continuous particulate samplers in the NCore station will be placed on the roof of the air monitoring shelter with the sample inlets 1 meter above the roof (4 meters above ground). The control units will be located inside the temperature-controlled shelter.

2. **Spacing from Obstructions:**
   There are no obstructions to air flow around the site. The WMRC maintenance building is located 150 meters east of the proposed NCore station location and is 4 meters in height. This potential obstruction is 37 times the height of the obstruction away from the station and is not in a quadrant where it would affect the prevailing wind direction.

3. **Spacing from Roadways:**
   Tables E-1, E-2, and Figure E-1 of 40 CFR Part 58 Appendix E list the minimum distances from roadways a monitoring probe needs to be based on the average daily traffic (ADT) counts. Table 3 summarizes the findings and includes the minimum separation distance from roadways for each pollutant. ADT counts were obtained from traffic count data from the California Department of Transportation's (CalTrans) website, at:
   http://traffic-counts.dot.ca.gov/2011all

Table 3
Spacing from Roadways Analysis

Roadway	ADT	Distance from site (meters)	Minimum Distance Required (meters)			
			Ozone Table E-1	NO/NO_y Table E-1	CO Table E-2	PM Figure E-1
US Highway 395	15,200 (2011)	5,700	40	30	45	80
East Line Street, Poleta Road	<1000 (estimated)	85	40	30	45	80

4. Spacing from Minor Sources:

The closest source to the site is the community of Bishop, California, 5 kilometers east of the site. The greater Bishop area has a population of approximately 12,600 (2010 US Census Bureau). Pollutant sources are limited to small businesses, residential home heating, vehicular traffic (15,200 per day) along US Highway 395. There are two permitted sources near the site: 7/11 Materials 4.5 km to the west and Standard Industrial Minerals 5 km to the north. These sources are listed below (Table 4) along with their emission rates. The first source is a concrete batch plant and the second is a non-metallic minerals (primarily kaolin clay) processing plant. These plants' operating schedules are limited to 3 to 5 days per week and to a certain number of weeks per year, usually in the summer months.

Table 4
Minor Source Emissions

Source	Emissions Type	Hours of Operation Per day	Emissions Rates	
			Pounds Per Hr. For Op	Pounds per hour 24hrs/day, 365 days/yr.
7/11 Materials	particulate	14	5.7	0.26
Standard Industrial Minerals	particulate	8	4.22	0.19




N
W E
S




Direction	Description	Distance from Site
North	Power line along Line Street/Laws-Poleta Road	124 meters
North East	White Mountains	14 kilometers
East	WMRC Maintenance Building (maintenance and repair shop)	150 meters
South East	Owens Valley, open land	
South	Owens Valley, open land	
South west	Owens Valley, open land	
West	Bench above Owens River	600 meters
North West	Owens Valley, open land	

Site Details:

The Google Earth^{tm} image on page 7 indicates where the air monitoring shelter is located on the White Mountain Research Station compound. The shelter is 8' w x 8'h x 20' l. The roof of the shelter is flat to support the sample inlets for the continuous particulate samplers and has additional room for other samplers if the need arises. Immediately adjacent to the shelter is the sampling platform that provides a 10' x 20' area elevated to the level of the shelter roof where future monitors can be installed. The 10-meter meteorological tower and the District's Portable monitoring station are placed north of the NCore shelter and sampling platform (See photos in the NCore Site Report). The meteorological tower is a telescoping type that provides for easy servicing and calibration of the meteorological instruments. The shelter is wired for 200-amp service and has internet and cellular telephone connections. The shelter has a heating and air conditioning system that maintains indoor temperatures between 20-30 º C, as required for the operation of the pollutant gas analyzers.